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Spatial Determinants of Immigrant Entrepreneurship

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Contents

1 Introduction

Entrepreneurship, or the formation of new businesses, is closely related to the growth of the U.S. economy and the welfare of its participants. It is widely accepted that successful entrepreneurships lead to accelerated productivity growth and increased job formation, as well as innovation across industries. Evidence of these contributions has increased people's awareness and focus on "start-ups" in recent years and there appears to be heightened publicity around so-called "start-up culture." Much of recent U.S. policy aimed to provide incentives to new entrepreneurs in order to increase rates of business formation and strengthen the economy. In 2011, President Obama launched a White House initiative, "StartUp America," aimed at inspiring and accelerating high-growth entrepreneurship throughout the United States[1]. Among the proposed goals of the plan was lowering barriers to entrepreneurship in underserved communities. In contrast, none of President Trump's recent policy has addressed entrepreneurship and it is unclear as to whether he intends to take action on it in the future. Hopes to renew the entrepreneurial dynamism of America's industries, which many see as a "source of competitive advantage" among world economies, have also contributed to various city- and state-level policy efforts to attract entrepreneurs in these locations. While some aspects of these initiatives seek to benefit all nascent entrepreneurs, other provisions direct attention specifically toward empowering immigrants to start new businesses through the reformation of visa programs.

Immigrants are thought to be essential to both entrepreneurship and innovation. Across the United States, there is a consistent and growing overrepresentation of immigrants in the formation of new businesses. Even in states with the lowest immigrant shares of the population, the shares of immigrant-founded new businesses are roughly double the immigrant shares of the state population. As the share of immigrants who are business owners in the United States grows, it is essential to narrow the focus of current government policy and economic literature on the presence and contributions of immigrants to entrepreneurship.

In the current economic literature, immigrant entrepreneurs are remarkably understudied. There has been considerable debate over the effect of immigrants in the workforce on the native-

[1] Startup America. (n.d.). Retrieved December 20, 2016, from https://www.whitehouse.gov/economy/business/startup-america

born[2] population, especially on their potential to displace native workers or depress wages. Consequently, the majority of current literature on immigrants focuses on the externalities of immigration that affect the welfare of the native-born population, rather than the welfare of immigrants themselves. Such research, when it posits that immigration is detrimental to the non-immigrant population, is often cited in arguments for limiting the immigrant population in the U.S. President Trump's recent executive actions on immigration, while motivated by many factors, are often rationalized using these arguments. However, it is clear that such orders reveal a hostility toward immigrants with the strong potential to impact the number of immigrant entrepreneurs residing in the United States, as well as those with intentions to become business-owners.

Within the domain of study on immigrant entrepreneurship, many have deeply considered the individual qualities of immigrants that make them more or less likely to be entrepreneurs and the qualities that distinguish immigrant-founded firms from native-founded firms. Despite these efforts, an examination of the regional and local factors that affect the shares and growth of immigrant entrepreneurship in the United States, as well as research-based public policy recommendations to encourage immigrant entrepreneurship, remain absent from the current analysis. Before proceeding with such programs as StartUp America, or executive actions on immigration, the lack of definitive conclusions on what encourages immigrants to start forming businesses in specific locations must be corrected. The dearth of concern for this topic makes it essential to discover the specific drivers of entrepreneurship for immigrants, rather than, simply, the spillover effects of immigrant entrepreneurship.

Specifically, this thesis focuses on determining the individual and state-level factors that impact the share of immigrant-owned businesses in the United States. This study also considers the effect of the H-1B temporary visa program on rates of immigrant entrepreneurship across states. The shares of immigrant-owned new[3] firms, as well as the growth rates of these shares, vary greatly across states. In 2012, for example, the share of immigrant-founded new businesses in California was 42 percent and 2.4 percent in South Dakota. Additionally, in states such as

[2] To describe non-immigrants, native-born, native, and non-immigrant are used interchangeably.
[3] "New firms" are defined as any firm founded within the 5 years prior to the dates the Survey of Business Owners was conducted. For example, any firm founded from 2003 to 2007 would be considered a "new" firm among those surveyed in the SBO.

Tennessee the share of new businesses founded by immigrants rose 16.7 percent from 2007 to 2012, while it fell by 5.4 percent in New Mexico during the same time frame. Figures 1 and 2 and Tables 1 and 2 illustrate the immigrant shares of new businesses across states, as well as their changes over time. The extraordinary differences between the shares and growth rates of immigrant entrepreneurship across states provide significant motivation for understanding the factors that make business formation a desirable option for some individuals and not others. Furthermore, this study will address the extent to which these factors affect immigrants and non-immigrants differently. The analysis employs data from the 2007 and 2012 Survey of Business Owners, American Community Survey, County Business Patterns, and Community Reinvestment Act. These datasets supply the dependent variable, an indicator of whether an individual is self-employed, as well as the information used to construct the individual- and state-level factors included as independent variables in the OLS regression models. Additionally, this research considers the effect of the H-1B visa program on the shares of immigrant entrepreneurs across states. The impacts of the factors that influence an immigrant's likelihood to be self-employed, and the effects of H-1B visa admissions, will inform a discussion of public policies that may or may not encourage immigrant entrepreneurship.

While I find that a considerable number of individual-level factors, such as home ownership and education, are correlated with an immigrant's decision to be self-employed, it is not possible to establish any causal interpretation simply using an OLS regression, due to the endogeneity present in the model. Similarly, it is not possible to determine the causal, state-level factors that make rates of immigrant entrepreneurship much higher in some states than others due to the endogeneity of state-level characteristics and the percentage of new businesses owned by immigrants. However, the factors correlated with high rates of immigrant entrepreneurship merit detailed consideration. In order to circumvent the difficulty, this study uses changes to the H-1B visa cap as an exogenous shock to the immigrant population in order to examine its effect on the immigrant share of new businesses. The results indicate that an exogenous increase in H-1B visa admissions leads to a proportionally greater change in the share of immigrant-owned new businesses across states. This result has substantial implications for national visa policy, which will be discussed further.

The following section describes the relevant literature and current arguments regarding immigrant entrepreneurship, regional drivers of entrepreneurship, and immigration policy. The

third section provides a descriptive analysis of the individual-level factors that are correlated with an immigrant's probability of being self-employed. The fourth section provides background on the H-1B visa program and estimates of the population of immigrants residing in the U.S. on the program. The fifth section describes the empirical framework of the instrumental variables strategy and discusses the outcomes of the analysis. The sixth section details the policy implications of the results and the seventh section concludes the study.

2 Literature Review

Numerous branches of economic literature are related to this study. The current literature that focuses on the particular contributions of immigrant entrepreneurs to the U.S. economy is most relevant to this study. However, research efforts exploring the regional drivers of entrepreneurship, as well as the literature that addresses the impact of immigration policy on immigrant welfare in the workforce are highly relevant as well.

2.1 Immigrant Entrepreneurship

The literature on immigrant entrepreneurship thoroughly documents the characteristics of immigrant business owners and the types of businesses they own. Generally, immigrants appear to be more entrepreneurial than non-immigrants, meaning that the rate of business ownership is higher for immigrants than for non-immigrants (Fairlie 2012). However, in George Borjas' 1986 study, "The Self-Employment Experience of Immigrants," Borjas finds that assimilation, or the longer an immigrant has resided in the United States, increases the likelihood that an immigrant will be self-employed. He also discovers that a major reason that immigrants are more likely to be self-employed is the existence of geographic "enclaves," or concentrations of immigrants from similar national, ethnic, or language backgrounds in a geographic location. He believes that informational asymmetries between immigrant enclaves and the rest of the population give immigrants an advantage in serving people from a similar background.

Lofstrom (2002) also shows that though immigrants are more likely to be self-employed, rates vary greatly across ethnic groups. Lofstrom finds that self-employed immigrants are also likelier to be more educated and have higher earnings than immigrants who work for wages or salaries, though they are unlikely to reach earnings parity with non-immigrants. He calls for a more comprehensive investigation into the greater relative difference of earnings between self-

employed and salaried immigrants and self-employed and salaried non-immigrants, believing that it is an important explanation for the higher self-employment rates of immigrants.
In research on the types of businesses that immigrants tend to own, Fairlie (2012) finds that immigrant-owned firms are more likely to hire employees than native-owned firms; however, they tend to hire fewer employees as well. Additionally, average sales of immigrant-owned firms are about 70 percent as large as the volume of sales for native-owned firms. Furthermore, his study goes into depth documenting the availability of start-up capital for immigrant and non-immigrant firms. He discovers that the most common sources of start-up capital for both immigrant and non-immigrant-owned businesses are personal and family savings, though credit cards and bank loans are also common. Notably, the industries in which immigrants and non-immigrants appear to concentrate do not differ much either. Home ownership emerges as a potentially important determinant of business formation as well, as it can be used as collateral to obtain loans. Fairlie notes that homeowners are 10 percent more likely to start businesses, though he does not explicitly determine whether it is a causal relationship, and suggests that immigrants might have higher business ownership rates if they were as likely to own homes as non-immigrants.[4]

In "Immigrant Entrepreneurship," Kerr and Kerr (2016) are among few to examine the growth of immigrant-owned firms in the United States and express interest in the regional variation of immigrant entrepreneurship. They find that immigrant-owned firms experience greater volatility in terms of remaining in business or failing. While failing more frequently than native-owned firms, they generate greater employment if they stay in business and become associated with higher payroll and a greater number of establishments. Moreover, they suspect that these actions emerge from differences in the ways in which immigrant entrepreneurs choose the locations and industries of their firms.

2.2 Regional Drivers of Entrepreneurship

A modest amount of the literature on immigrant entrepreneurship has examined regional variation. In research on "High-tech Immigrant Entrepreneurship in the United States,"

[4] Further evidence on the importance of home ownership as a means of financing start-ups is found in Kerr, Kerr, and Nanda (2015) and Adelino, Schoar, and Severino (2016).

Hart, Acs, and Tracy (2009) find that immigrant-founded firms tend to be located in regions with large immigrant populations. Additionally, Saxenian (1999), in "Silicon Valley's New Immigrant Entrepreneurs," explores the effects of Chinese and Indian immigrant entrepreneurs locally on California's Silicon Valley region and globally on China and India. Outside of the literature on immigrant entrepreneurship, Reynolds, Miller and Maki (1995) attempt to explain the regional variation in firm "births and deaths," for businesses across the United States. They examine various state- and county-level variables in order to determine which factors drive entrepreneurship at the regional level. They are unable to establish any causal links, but find that population growth, large personal wealth, presence of mid-career adults, and low unemployment have the greatest positive correlations with high rates of firm births. In contrast, they find no association of R&D resources, costs of production, or access to national transportation with firm births. Armington and Acs (2000) conduct a similar study on a regional level in order to explain the variation in firm birth rates across regions. They find that regional differences in industry, income growth, unemployment rates, and human capital, such as percentage of college graduates, have a strong relationship with firm birth rates.

There is still a fair amount of room for investigation into the specific drivers of entrepreneurship for immigrants and non-immigrants alike. Additionally, there is reason to suspect that the drivers of entrepreneurship for immigrants and non-immigrants may differ substantially.

2.3 Immigration Policy

The body of literature examining immigration policy has resulted in interesting conclusions about the effect of visa programs on immigrant workers, especially in the technology sector. In Jennifer Hunt's 2009 study, "Which Immigrants are Most Innovative and Entrepreneurial: Distinctions by Entry Visa," she explores the advantages of immigrants who entered the U.S. on a student visa or temporary work visa in areas such as wages, patenting, and publishing. She finds that immigrants have an advantage over natives in the first two categories, but it is generally explained by their higher education and concentration in certain fields of study. In a more detailed 2008 study, "How Much Does Immigration Boost Innovation," Hunt and Gaulthier-Loiselle examine the patenting behavior of immigrants relative to non-immigrants. Using the 2003 National Survey of College Graduates, they find that immigrants patent at double

the native rate, though it is entirely accounted for by their "disproportionately holding degrees in science and engineering." However, they also discover that immigrants do not crowd out natives in patenting, rather they create positive spill-overs that encourage natives to patent at higher rates as well.

Lofstrom and Hayes (2011) specifically examine immigrants who reside in the U.S. on the H-1B, a temporary work visa. They find that people on the H-1B are typically younger, more skilled, and higher paid in STEM fields, than native-born workers in the same occupation. Other studies also evaluate the impact of the workers on the H-1B, such as Kerr and Lincoln's "The Supply Side of Innovation: H-1B Visa Reforms and U.S. Ethnic Invention." Kerr and Lincoln (2008) discover that fluctuations in H-1B admissions levels have a positive effect on patenting in cities and firms. Like Hunt and Gaulthier-Loiselle, they also find weak crowding-in effects from immigrant patenting.

Despite these strong conclusions about visa programs, there tend to be misconceptions about the immediate effects of visa policy. As Kerr and Kerr (2016) claim, many believe that expanding the cap for the H-1B would increase entrepreneurship, given its strong impact on patenting and STEM fields; however, the H-1B is temporary work visa that ties workers to their initial employers. Only a green card, which is typically approved after six or more years, would allow temporary workers to start their own business. While unrelated to visa policy, Lofstrom's 2010 study of low-skilled workers in California supports the idea that policy often does not effectively address immigrant entrepreneurs. He believes that while low-skilled individuals, of which many are immigrants, can be successful entrepreneurs, the majority experience far lower earnings and success rates than those with higher skills. Therefore, he claims that policies designed to encourage low-skilled immigrants to start businesses are misguided and policies to promote skill development are likelier to improve outcomes for low-skilled immigrants.

Review of each of these areas of literature reveal that there is yet much room for improvement and greater breadth of knowledge in these sectors. Through integrating these related, though distinct, bodies of literature, this study aims to both address their shortcomings and contribute to the vital information that they provide.

3 Descriptive Analysis

The first portion of this thesis aims to discover the individual- and state-level factors that influence an immigrant's likelihood to be self-employed. It also seeks to determine whether these factors affect immigrants and non-immigrants differently. The descriptive analysis seeks to address the following questions: (1) what are the individual and state-level factors that make an immigrant or non-immigrant likely to be self employed; (2) how does the impact of these factors differ for immigrants and non-immigrants; and (3) what are the state-level factors that influence the share of immigrant-owned new businesses across states.

3.1 Characteristics of Immigrant Entrepreneurs and Businesses

In order to conduct the descriptive analysis, it is necessary to have data on both firm and business-owner characteristics. I use the 2007 and 2012 waves of the American Community Survey, conducted by the U.S. Census Bureau. The survey has the advantage of a large sample size, and detailed information on respondents' countries of birth, employment, age, education, and income. I restrict my sample to employed, full-time workers, excluding those in the armed forces, who are either self-employed in incorporated businesses or work for wages. Additionally, I require that individuals in the sample be between the ages of 18 and 64. The 2007 and 2012 iterations of the ACS are selected because they correspond to the two available years of the Survey of Business Owners and Self-Employed Persons (SBO), also conducted by the U.S. Census Bureau.

The SBO reports data at both the business and owner level, for up to four major owners. Various business-level statistics include sources of start-up and expansion capital, languages used in transactions, types and number employees used, and firms' receipts. Among the owner-level statistics are, most importantly, whether or not the owner was born in the United States, the owner's age, and education level. The smallest geographic area reported for each firm in the SBO is the state. I have also restricted my sample to "new businesses," in other words, businesses established within five years prior to the survey. Accordingly, the 2007 sample only includes only businesses founded between 2003 and 2007, while the 2012 sample includes only businesses founded between 2008 and 2012. Furthermore, the firms in the sample must be non-public, incorporated and employers. While the data from the 2002 SBO is publicly available, it does not include data on owner birthplace, which I use to indicate whether an owner is an

immigrant. Therefore, it is not useful for this analysis. In both the ACS and SBO, I categorize immigrants as people born in a country outside of the United States.

Table 4 compares the characteristics of the sample of self-employed individuals and business-owners in the SBO to self-employed individuals in the ACS. Due to various inconsistencies between the ACS and SBO, it is not possible to exactly match the samples of self-employed individuals I create. While the SBO provides data on self-employed individuals and owners of employer firms, the ACS does not distinguish between the two categories. Thus, I report the characteristics of the sample of SBO firms with and without self-employed individuals. Within the ACS, it is also not possible to restrict the sample to owners of "new businesses" because there is no data on the date of the founding of an individual's business. Additionally, due to the categorical nature of the age variable in the SBO, I am unable to match the age categories I created for use in the ACS with those existing in the SBO. Overall, the samples appear relatively comparable and consistent with one another. The similarity SBO sample to the ACS sample improves when self-employed individuals are included. Roughly, most immigrant entrepreneurs are at a mid-career age and have greater than a high school education.

Table 5 confirms the results in Fairlie (2012), which show that immigrants are generally more entrepreneurial than non-immigrants in the United States. My results also suggest that the percentage of immigrants who are self-employed has increased from 2007 to 2012, while the percentage of non-immigrants has decreased during the same time frame.

Table 6 describes the percentage of firms which report using various sources of start-up capital in the SBO. The table compares firms with immigrant or native owners only and firms with mixed owners. Mixed-ownership firms tend to be bigger than firms that are only immigrant- or native-owned, simply because the category requires that the firm have multiple owners. Thus, a greater percentage of mixed-ownership firms report using more of each type of capital than the other types of firms. The most common sources of start-up capital include personal savings, which approximately 70% of all types of firms report using, credit cards, bank loans, and home equity. As the table shows, these sources do not differ substantially among the different owner categories.

Additional sources of data in my analysis include the County Business Patterns (CBP) data and the Community Reinvestment Act (CRA). The CBP series provides annual data on the

number of firms in the U.S. at both the county and industry level. The 2007 and 2012 years of the CBP are used in my state-level analyses.

The Community Reinvestment Act (CRA) "is intended to encourage depository institutions to help meet the credit needs of the communities in which they operate, including low- and moderate-income neighborhoods, consistent with safe and sound operations."[5] Originally enacted in 1977, it has been revised multiple times, most recently in August 2005. Each "depository institution's record" is periodically evaluated by federal supervisory agencies. Members of the public are also able to submit comments on the banks, which are supposedly taken into consideration by federal agencies. The CRA data provides county-level estimates of the number and amount of small business loans each banking institution issues. The loan data are organized both by the size of the loan and the revenues of the small businesses.

3.2 The Determinants of Self-Employment

In order to address the factors that influence an individual's likelihood to be self-employed, I conduct an individual-level OLS regression. Defining $SE_{i,t}$ as a dummy variable that describes whether an individual is self-employed, the model I estimate becomes:

$$SE_{i,t} = \alpha + \beta_1 X_{i,t} + \beta_2 Year_t + \beta_3 State_{i,t} + \varepsilon_{i,t}$$

where $X_{i,t}$ is a vector of independent variables, Year is year fixed effects, and State is state fixed effects. The results of my regressions using this model are described in Table 7 which reports outcomes for both immigrants, in columns 1 though 6, and non-immigrants, in columns 7 through 11. The independent variables included in the vector $X_{i,t}$ are gender, education, age, years that an individual has lived in the U.S. conditional on being an immigrant, whether the individual owns a home, the value of an individual's home, a state-level measure of income, race, and a measure of the availability of small business loans at the state-level. Gender is a dummy variable that indicates whether an individual is female or not. Education is split up into three dummy variables that each corresponds to a particular level of education: either less than a high school education, high school and some college, and a bachelor's degree or higher. The

[5] Community Reinvestment Act. (February 11, 2014). Retrieved April 6, 2017 from www.federalreserve.gov/consumerscommunities/cra_about/htm

regressions omit less than high school education. Similarly, age is split up into three categories: ages 18 to 29, 30 to 50, and 51 to 64. The regressions omit the 18 to 29 category.

The state-level measure of income is a ratio of the average of self-employment income to the average of wage/salaried income, based on one's status as an immigrant or non-immigrant. This ratio is meant to describe a factor that influences an individual's choice to be self-employed. A comparison of one's potential earnings as a self-employed person, estimated here as the average of self-employment earnings, with average earnings as a wage or salaried worker is likely to influence one's choice of work. Other measures of income were considered for these regressions, yet found to be unsuitable. In particular, an individual's actual income is highly influenced by the dependent variable, their actual work status, which makes it a poor choice. Another method I attempted included a ratio of an individual's predicted earnings in both types of work, calculated using individual-level characteristics included in the ACS data, in the regressions. However, these measures were found to be too highly correlated with other factors in the regressions to be useful.

Influenced by the start-up capital commonly reported in the SBO, I also include a dummy variable that describes whether a person owns a home, a variable that reports the value of an individual's home, and state-level loan data. Home value does not emerge as a useful factor for predicting likelihood to be self-employed because home values do not differ very much among a state's immigrant or native population. Additionally, home value is conditional on owning a home and, thus, reduces the sample size. The loan variables I have included in the regressions are the number and value of small business loans made under the amount of $100,000, between $100,000 and $250,000, and between $250,000 and $1,000,000, as well as the gross number and value of loans made to businesses that report less than $1,000,000 in revenue. These variables are scaled by the state population. Estimates using different combinations of these variables are reported in columns 3 through 6 of Table 7. The results appear to be robust to different combinations of these loans.

Women are globally underrepresented in self-employment, especially among owners of employer firms. The first row in Table 7 illustrates that being female is consistently associated with a decrease in the likelihood of being self-employed for both immigrants and non-immigrants. This decrease is stronger for non-immigrants than it is for immigrants. Various

studies have suggested differing risk attitudes between women and men, the likelihood of getting funding for women, and overconfidence in men as potential factors that explain the difference.

Notably, a high school education is associated with a significant increase in the likelihood of being self-employed for immigrants, but a significant decrease in likelihood for natives. Additionally, a college degree is associated with an insignificant decrease in the likelihood of being self-employed for immigrants, and a small, but significant decrease in likelihood for natives. It is possible that as natives becomes more highly educated, they see their prospects for wage employment increase and therefore choose employment over self-employment, while immigrants do not see the same increase in their employment prospects. There are a few factors that may explain the difference. Mainly, discrimination in the workplace is likely to limit immigrants' opportunities, or deter them from pursuing employment. There is also some research to suggest that an immigrant's *level* of education does not matter as much to employers as the *country* in which an immigrant received his or her education. Employers may be biased against, or skeptical, of education received outside of the U.S.

Age has a significant, positive correlation of a similar size for both immigrants and non-immigrants. As they age, both immigrants and non-immigrants are more likely to be self-employed. A higher number of years spent in the U.S. is also correlated with a higher probability of being self-employed for immigrants, although the effect is small. Immigrants may see the resources available to them for self-employment improve with time. Owning a home also has a significant positive correlation with the probability of self-employment for immigrants and non-immigrants, though the effect is higher for immigrants. This may indicate a greater eligibility for home equity or bank loans, which are common sources of start-up capital for both groups.

The income ratio has an insignificant negative correlation with self-employment for immigrants and an insignificant positive correlation for natives. I would expect the correlation to be positive in both cases, as it would indicate higher potential earnings to self-employment. Yet, the insignificance of both coefficients suggests that the measure may simply be imprecise. However, a t-test reports that mean self-employment income is significantly larger than mean salaried income for immigrants and natives. In future research, it would be worthwhile to explore the relationship between potential earnings and immigrant self-employment outcomes in more depth. The outcomes of the regressions with the loan data included show that the

availability of small loans under $100,000 and the gross number of small business loans have a significant, positive correlation with both immigrants' and natives' likelihoods of being self-employed.

The results of these regressions provide substantial insight into the population of immigrant entrepreneurs in the U.S. A better understanding of immigrant entrepreneurs may generate understanding to how one might generate incentives to increase entrepreneurship. While these results have great descriptive power, the correlations cannot be interpreted in a causal manner. The model suffers from endogeneity, due to the potential for the dependent variable to affect the independent variables. For example, in addition to the likelihood that someone who owns a home has a higher probability of being self-employed, it is also possible that the fact that an individual is self-employed makes her more likely to own a home. However, these results remain vital to our understanding of the population of immigrants, as well as non-immigrant entrepreneurs in the U.S.

3.3 State-Level Determinants of Immigrant Entrepreneurship

In addition, this paper aims to determine the spatial, or state-level, factors that lead to the vast differences in the rates of immigrant entrepreneurship across states. As Tables 1 and 2 illustrate, both rates of immigrant entrepreneurship and the growth rates of immigrant entrepreneurship from 2007 to 2012 vary greatly across states. Previous literature confirms that much of the differences across states is correlated with the differences in the immigrant percentage of the state population. Hart et al. (2009) find that immigrant founded firms tend to be located in states with large immigrant populations. A comparison of Tables 1 and 3 emphasizes this point well. While it is intuitive that this correlation exists, and later results will confirm the relationship, it is unlikely that the mere percentage of immigrants in a state accounts for all the variation, given the vast differences among immigrant populations across states.

In order to test the relationship between the state shares of immigrant entrepreneurship and the immigrant share of the state population, as well as other state-level factors and characteristics of the immigrant population, I choose to run an OLS regression. Defining $IMBUS_{s,t}$ as the percentage of immigrant-owned new businesses in a state, calculated using the 2007 and 2012 iterations of the SBO, the model I estimate becomes:

$$IMBUS_{s,t} = \alpha + \beta_1 IMPOP_{s,t} + \beta_2 X_{s,t} + \beta_3 Year_t + \varepsilon_{s,t}$$

where $IMPOP_{s,t}$ is the percentage of the total population that are immigrants, $X_{s,t}$ is a vector of controls, and Year is year fixed effects. The results of this regression are located in Table 8. The state-level controls contained in $X_{s,t}$ include the percentage of immigrants who own a home, the percentages of immigrants with the earlier-described levels of education, the percentages of immigrants within the earlier-described age categories, and a variable I have called MHHI, which measures a state's concentration in any particular type of industry. Earlier studies, such as Armington and Acs (2000), reflect the strong impact of a state's industry composition on the rate at which new firms are created. One could imagine that a state heavily concentrated in an industry with high barriers to entry would lead to fewer firm births, for example. The initial measure of industry concentration I considered was an indicator for the industry with the greatest number of establishments in a state. However, this proved to be ineffective because the industry with the greatest number of establishments in almost every state is retail, according to the CBP. Therefore, I create a modified Herfindahl-Hirshman index to describe a state's industry composition.

A Herfindahl-Hirshman Index, HHI, is a common measure of market concentration. Typically, one calculates it by "squaring the market share of each firm competing in the market and then summing the resulting number."[6] This measure is commonly used in anti-trust or merger evaluations. While using an actual HHI for each industry in a state may have been useful, data constraints prevented me from doing so. Therefore, I calculate a modified version of the HHI, which I call *MHHI*:

$$MHHI_s = \sum_{i=1}^{N} \left[\frac{Number\ of\ Establishments_{si}}{Total\ Number\ of\ Establishments_s} * 100 \right]^2$$

[6] Herfindahl-Hirschman Index. (July 29, 2015). Retrieved April 7, 2017 from www.justice.gov/atr/herfindahl-hirschman-index

where *s* is the state and *i* is the industry. MHHI is a helpful state-level measure of the concentration of a state's establishments in any industry. The data used to create this variable come from the CBP data described earlier.

Table 8 finds a large, significant correlation between the immigrant percentage of the state population and the immigrant share of new businesses. The answer is relatively intuitive, as a high percentage of immigrants in a population would certainly imply more new businesses being owned by immigrants. However, it is interesting to note that the coefficient on the immigrant percentage of the population is greater than 1, meaning that for a given increase in the immigrant population in a state, the implied increase in the immigrant share of new businesses is proportionally larger.

Also significant at the 1-percent level is the coefficient on the percentage of the immigrant population with a Bachelor's degree or higher. A higher percentage of immigrants with a college degree is correlated with higher percentages of immigrant-owned new businesses. In contrast, the individual-level analysis shows that having a college degree is not significantly correlated with increased likelihood of being an entrepreneur. Additionally, an immigrant population with a higher percentage of high school graduates is negatively, though insignificantly, correlated with the share of immigrant-owned new businesses at the state-level. At the individual level, the correlation between a high school degree and likelihood of being an immigrant is positive.

My earlier results showed that owning a home was associated with an increased likelihood of being self-employed; however, the state-level outcomes reveal that higher percentages of immigrant home ownership are correlated with lower percentages of immigrant-owned new businesses. The unexpected differences between the coefficients on education and home ownership may be explained by the possibility that more low-skilled immigrants gather in areas with a high-skilled population. For example, Cortez and Tessada (2011) find that low-skilled immigrants increase their hours of work when the supply of high-skilled women increases, due to demand for services. Similarly, a highly-educated immigrant population may demand more services, leading to opportunities for low-skilled immigrants who will gather in the same area.

Age remains consistently, positively correlated with the immigrant share of new businesses; however, the outcomes for both categories are insignificant. Additionally, the

coefficient on MHHI was negative and insignificant. A negative correlation implies that a higher concentration of a state in any particular industry leads to less immigrant entrepreneurship.

While running a state-level OLS regression is useful for beginning the empirical analysis, it does not produce the causal estimates required for making policy conclusions. By definition, using the 2007 and 2012 SBO data to run a state-level analysis limits the available number of observations. As mentioned previously, it is not possible to extend this analysis beyond two years because the 2002 wave of the SBO does not include data on owners' birthplaces. This state-level OLS model may be subject to endogeneity similar to that of the individual-level OLS model. In this case, it is not possible to know whether the characteristics of the immigrants contribute to the variation in shares of immigrant-owned new businesses across states or, conversely, whether immigrants with such characteristics are attracted to those states because of the high number of immigrant-owned firms which exist there.

One way to resolve the endogeneity that is present here is to create a model that incorporates instrumental variables. In order to estimate the impact of the state-level population of immigrants on the percentage of immigrant-owned new businesses without the problems posed by endogeneity, I require a source of exogenous variation in the immigrant population. I propose the national admissions of immigrant workers on the H-1B visa as a source of exogenous variation in the immigrant population. While I am unable to obtain actual values of the national population of immigrants residing in the U.S. on the H-1B, I am able to obtain estimates of these values. This, interacted with the state-level "dependency" on immigrant workers serves as my instrument. The following chapters will describe the H-1B program in more detail and the empirical methods that incorporate these instruments.

4 The H-1B Visa Program

The H-1B is the major visa category in the U.S. that allows immigrant workers to enter the U.S. temporarily under the sponsorship of a U.S. employer. The H-1B visa program allows U.S. employers to apply for temporary assistance from skilled, foreign workers in "specialty occupations." A specialty occupation is generally characterized as "so complex or unique that it can be performed only by an individual with a degree."[7] Thus, approximately 99% of all H-1B

[7]H-1B Specialty Occupations, DOD Cooperative Research and Development Project Workers, and Fashion Models. (April 4, 2017). Retrieved April 17, 2017 from

visa-holders have a bachelor's degree or higher level of education. In 2012, the most widely listed specialty occupation on approved H-1B petitions by U.S. employers was "computer-related occupations."[8] Table 10 illustrates the distribution of approved applications by specialty occupation in 2001 and 2006.

Each visa is valid for a term of three years, which an employer can request to extend for a second, additional term of 3 years. Thus, the maximum length of time an individual can reside in the U.S. on the H-1B is six years. During these terms, a worker is tied to the employer that sponsors the visa. An employer can also apply for permanent residency on behalf of the worker. Permanent residency is usually requested in the form of a "green card." While there is public data on green card approvals, there is little data on rates of transition from H-1B temporary residency to permanent residency, as well as most forms of transition from temporary to permanent residency.

All employers are required to submit a Labor Condition Application (LCA) to the U.S. Department of Labor to obtain an H-1B visa for foreign labor. LCA's are required to ensure that employers are acting in accordance with U.S. law, with regard to requirements that foreign workers receive the prevailing wage for their labor and satisfactory working conditions. These applications provide an important source of data in my later analysis. There are few good substitutes to the H-1B, which makes it a widely-used program and source of foreign labor for the U.S.

The Immigration Act of 1990 established an annual cap on the number of H-1B visas, with an exemption for renewals. There is no cap on the number that can be issued for residents of any particular country, though a few free trade agreements require that a certain number of visas be reserved for citizens of a few countries. Most H-1B beneficiaries come from India and China, 64.1% and 7.6% respectively in 2012. Recipients from other countries each generally make up less than 3% of beneficiaries annually. Table 9 describes these countries in greater detail.

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https://www.uscis.gov/working-united-states/temporary-workers/h-1b-specialty-occupations-dod-cooperative-research-and-development-project-workers-and-fashion-models

[8] Reports and Studies. (February 2, 2017). Retrieved April 17, 2017 from https://www.uscis.gov/tools/reports-studies/reports-and-studies

The annual cap on H-1B admissions fluctuated significantly from 1990 to 2012. Figure 4, adapted and expanded from Kerr and Lowell (2010), illustrates the annual fluctuations in the H-1B cap over time. Additionally, the figure shows the total number of H-1B issuances, which tend to hover around the cap until 2002. The bursting of the "tech bubble" in 2001 led to decreased demand for workers in the tech sector, which implied decreased demand for foreign workers as well. In 2001, universities, government research labs, and various nonprofit organizations became exempt from the cap; however, demand for foreign labor had not yet recovered. In 2004, the H-1B cap was reduced to 65,000, with an additional 20,000 visas allotted for foreign workers with Master's degrees or higher. Once demand for foreign workers returned, around the time when the cap was decreased, the various exemptions led the total number of H-1B issuances above the cap. Since 2004, no further changes have been made to the cap, though President Obama proposed a sharp increase to the cap during his second term in office.[9] It is essential to note that in order to use H-1B admissions as a successful instrument, changes to the cap must be exogenous. At the state-level, where the analysis takes place, it is indeed quite reasonable to assume that individual states cannot effect changes to the H-1B cap.

Despite the comprehensive data available on the number of H-1B visas issued annually, the actual population of H-1B beneficiaries working in the U.S. at a given time is unknown. However, Lowell (2000) is able to build a model that estimates the population for the years 1990 to 2008. He uses the "known" H-1B inflows and models the outflows, which consist of emigration, death, and transitions to permanent residency. The population estimates are also included in Figure 4. Lowell's contribution is essential to this study, as the national population of H-1B beneficiaries is necessary to construct the instruments in my analysis.

5 Spatial Analysis of the H-1B Visa Program

5.1 Empirical Strategy

This analysis seeks to explain how U.S. visa policy, particularly with respect to the H-1B, impacts rates of immigrant entrepreneurship across states. The empirical framework of this

[9] H1B Visa Total Cap Stats from FY 1990 to 2018, Trend Plot until 2018. (March 11, 2017). Retrieved April 17, 2017 from https://redbus2us.com/h1b-visa-total-cap-stats-from-1990-to-2017-trend-plot-until-2017/

model estimates the impact of national H-1B admissions on the percentage of immigrant-owned new businesses across states. As previously explained, the endogeneity present in the original state-level OLS model makes it necessary to approach this question using instrumental variables. My method is adapted from Kerr and Lincoln (2010) who use similar instruments in a reduced-form model to estimate the change in H-1B admissions on employment in science and engineering. I exploit the significant variation in rates of immigrant entrepreneurship across states to examine how an exogenous shock to the national immigrant population affects a state's share of immigrant-owned new businesses.

I estimate the first-stage relationship between the immigrant percentage of each state's population, $IMPOP_{st}$, and the instrumental variable, IV_{st}, according to:

$$IMPOP_{st} = \alpha + \beta_1 IV_{st} + \beta_2 X_{st} + \beta_3 Year_t + \varepsilon_{st}$$

where X_{st} is a vector of demographic controls, including rates of home ownership, education, age, and MHHI, used in the initial state-level model, and Year is year fixed effects.

The second-stage regression measures the impact of the immigrant percentage of the population, $IMPOP_{st}$, estimated using the instrumental variable, on the percentage of immigrant-owned new businesses, $IMBUS_{st}$:

$$IMBUS_{st} = \alpha + \beta_1 IMPOP_{st} + \beta_2 X_{st} + \beta_3 Year_t + \varepsilon_{st}$$

where X_{st} is the earlier described vector of demographic controls, and Year is year fixed effects. Using instrumental variables requires certain assumptions for β_1 to properly identify the effects of the independent variable on rates of immigrant entrepreneurship. First, changes to the H-1B cap and, thus, the quantity of national H-1B admissions must be determined exogenously. In this study, it is safe to assume that individual states do not have the ability to impact the national cap on issuances of H-1B visas. Second, the instrument, IV_{st}, must be correlated with the immigrant percentage of the population and have different impacts across states. This assumption can be verified using existing data. Third, the instrument must be uncorrelated with any of the unobserved determinants of the states' shares of immigrant entrepreneurship.

Ideally, the instrument I use would describe the impact of H-1B admissions on the immigrant population of each state, i.e. the stock of H-1B immigrants in a state in a given time; however, as noted earlier, it is not possible to know this measure exactly. I estimate this measure by interacting the exogenous changes to the national population of H-1B workers with a measure of each state's "dependency" on H-1B workers. Each instrument is generally constructed as:

$$IV_{st} = H1Bpop_{t-6} * IMDep_{s,t-6}$$

where $H1Bpop_{t-6}$ is the lagged measure of the national population of H-1B workers and $IMDep_{s,t-6}$ is the lagged measure of immigrant dependency. In each of my instrumental variables, Lowell's national estimates of the H-1B population serve as $H1Bpop_{t-6}$. I use two measures of a state's initial dependency on immigrants, $IMDep_{s,t-6}$.

The first measure is generated from annual data published by the Department of Labor on Labor Condition Applications (LCAs). I aggregate the number of foreign workers requested in LCAs per state. Essentially, the number of workers requested in the LCAs represents each state's demand for H-1B workers, which makes it an apt measure of state dependency. I normalize each state's demand for workers by the total state population. The instrument that interacts Lowell's estimates of the national H-1B population and the LCA measure of dependency is constructed as:

$$LCAIV_{st} = \ln(Lowell_{t-6}) * \left[\frac{Apps_{s,t-6}}{StatePop_{s,t-6}}\right]$$

where $Lowell_{s,t-6}$ is the lagged estimate of the national population of H-1B workers, $Apps_{s,t-6}$ is the lagged number of H-1B workers requested for a particular state in LCAs in a given year, and $StatePop_{s,t-6}$ is the lagged total state population. Table 11 describes most and least dependent states on the H-1B program, using the LCA measure of dependency.

Due to the nature of the H-1B, the Lowell estimates and ACS dependencies used in this model must be lagged by at least 6 years. Foreign workers on the H-1B are tied for their sponsoring firm for a minimum of 3 years and thus, unable to start a firm immediately upon arriving. Most H-1B workers begin a second 3-year term with their initial employer before

obtaining a green card. Moreover, individuals from nationalities that are highly represented in the H-1B program, especially those from China and India, face between 5 and 10 year wait times for green cards.[10] The ideal lag time, according to this information, would be between longer than 6 years; however, the Lowell estimates and LCA data have a limited number of available years. A lag of 6 years is the most accurate amount of time given the data constraints.

My second measure of state dependency is derived from the ACS data described earlier. As Table 9 illustrates, the vast majority of H-1B workers come from China and India. Thus, a reasonable measure of a state's dependency is the share of Chinese and Indian immigrants as a percentage of the state population. The instrument that interacts the H-1B admissions and ACS measure of dependency is constructed as:

$$ACSIV_{st} = \ln\left(Lowell_{t-6}\right) * \left(CHKMTS_{s,t-6} + IPB_{s,t-6}\right)$$

where $CHKMTS_{s,t-6}$ is the share of immigrants from China, Hong Kong, Macau, Taiwan, and Singapore, lagged by 6 years, and $IPB_{s,t-6}$ is the share of immigrants from India, Pakistan, and Bangladesh, lagged by 6 years. The states which are most and least dependent on the H-1B program, as measured using the ACS, are listed in Table 12. Using two different measures of immigrant dependency to generate two different instruments serves as a test of the robustness of this model.

5.2 LCA Outcomes

Using the LCA instrument, I estimate the first-stage impact of H-1B admissions on the state-level share of immigrant-owned new businesses according to the equation below:

$$IMPOP_{st} = \alpha + \beta_1 LCAIV_{st} + \beta_2 X_{st} + \beta_3 Year_t + \varepsilon_{st}$$

The results of the first-stage, presented in Table 13, show that my estimate of the stock of H-1B workers in each state is predictive of the immigrant share of each state's population. In the presence of various state-level controls, a 1 percentage-point increase in the national population

[10] Wait times also depend largely on the category under which the individual applies for the green card. Such information is not available in the SBO or ACS.

of H-1B workers, scaled by the state dependency, leads to a 0.00223 percentage-point increase in the immigrant share of the population. While the effect is small in magnitude, it is significant at the 1 percent level. The positive value also suggests that an increase in my estimate of the stock of H-1B workers in a particular state does result in an increase in the immigrant percentage of the state population. The F-statistic in the first-stage is 12.716. The first-stage relationship is plotted in Figures 5 and 6. These graphs verify the relationship between the instrument and the immigrant percentage of the population.

I estimate the impact of a state's immigrant population, as predicted by my instrument, on the state-level immigrant share of new businesses according to the second-stage regression below:

$$IMBUS_{st} = \alpha + \beta_1 IMPOP_{st} + \beta_2 X_{st} + \beta_3 Year_t + \varepsilon_{st}$$

The results of the second-stage are presented in Column 3 of Table 14. The coefficient reports that a 1 percentage-point increase in the immigrant share of the population, as predicted by the LCA instrument, leads to a 1.346 percentage-point increase in the immigrant share of new businesses in a state. Hart et al. (2009) claim that the immigrant percentage of the state population is highly predictive of the state-level share of immigrant entrepreneurship. I have shown that this relationship is somewhat causal and that the effect is greater than 1. A given percentage-point increase in the state-level share of immigrants leads to an even greater increase in the share of immigrant entrepreneurship. As Figures 1 and 3 and Tables 1 and 3 reinforce, the share of immigrant entrepreneurship in each state is consistently higher than the immigrant share of a state's population. These findings indicate that an exogenous increase in the stock of H-1B workers does appear to increase rates of immigrant entrepreneurship across states. Thus, states can expect a differential, positive increase in the share of immigrant entrepreneurship, based on their dependency on H-1B workers, if the national cap on admissions of H-1B workers is increased.

It is useful to compare the results of the IV model with those of the original state-level model. These results are presented side-by-side for comparison in Table 14. It is clear that the effect of the immigrant share of the population on immigrant entrepreneurship is larger when I instrument for the immigrant population.

While the LCA data provides a reliable estimate of the demand for foreign workers within a state, the relationship between the LCA instrument and the state-level immigrant percentage of the population was not very large. Moreover, there is a small amount of measurement error that occurs when using the LCA data because it is calculated by fiscal year, as opposed to the actual year. Therefore, it seems useful to test an additional measure of state dependency, using the ACS state-level shares of immigrants from China, Hong Kong, Macau, Taiwan, Singapore, India, Pakistan, and Bangladesh.

5.3 ACS Outcomes

Using the ACS instrument as described earlier, I estimate the first-stage impact of H-1B admissions on the state-level share of immigrant-owned new businesses according to the equation below:

$$PopPct_{st} = \alpha + \beta_1 ACSIV_{st} + \beta_2 X_{st} + \varepsilon_{st}$$

The results of the first-stage model presented in Table 13 show that a 1 percentage-point increase in the national population of H-1B workers, scaled by the state dependency, results in a 0.537 percentage point increase in the immigrant share of the state population. The effect of the ACS instrument on the immigrant share of the population is much larger in magnitude than that of the LCA instrument; though both have significant effects. The fact that the coefficient is positive reinforces the positive relationship between the national population of H-1B workers and the state-level immigrant populations. The F-statistic for the first-stage is quite large at 198.099. The size of the F-statistic in this regression, indicates that the ACS instrument may be preferable to the LCA instrument.

In the second-stage regression, I estimate the effect of the immigrant percentage of the population, calculated using the ACS instrument, on the state-level share of immigrant entrepreneurship, according to the model below:

$$IMBUS_{st} = \alpha + \beta_1 IMPOP_{st} + \beta_2 X_{st} + \beta_3 Year_t + \varepsilon_{st}$$

The results of the second-stage, presented in Column 3 of Table 14, report that a 1 percentage-point increase in the immigrant percentage of the population, calculated using the ACS instrument, leads to a 1.346 percentage-point increase in the immigrant share of new businesses in a state. This model should be compared with both the original state-level model and the model that uses the LCA instrument in Column 2 of Table 14. Much like the results that I find using the LCA instrument, the outcomes of this model indicate that there is a positive, causal relationship between the immigrant percentage of the population, when instrument, and the share of immigrant entrepreneurship in a state. The size of the effect, which is greater than 1, is also consistent with the estimates that result from the LCA model; however, both the first- and second-stage results of the ACS model are stronger than those of the LCA model. The stronger effects in both stages of the ACS model, as well as the large F-statistic of the instrument in the first-stage, lead me to prefer the ACS instrument to the LCA instrument.

The general interpretation of these results is the same: an exogenous increase in the national cap on admissions of H-1B workers will lead to a differential, positive impact on the share of immigrant entrepreneurship across states. The policy implications of this result are discussed in the following section.

6 Policy Outcomes

As my research and prior literature has shown, immigrants play a significant role in entrepreneurship in the U.S. My results quantify this relationship and indicate that exogenous increases in the national stock of H-1B workers lead to increased rates of immigrant entrepreneurship across states. States can expect to see differential positive increases in the share of immigrant entrepreneurship, based on their dependency on H-1B workers, if the national cap on admissions of H-1B workers is increased. Considering the substantial impact that immigrants have on rates of entrepreneurship, it is imperative to consider the implications of the H-1B visa policy on entrepreneurship in the U.S.

Recently, economists have begun to speculate that the productivity slowdown in the United States, which has been present since the 2008 recession, has something to do with the slowing rates of new business formation. Janet Yellen, Chair of the Board of Governors of the Federal Reserve System, stated in a 2017 speech that

> "Economists do not fully understand the causes of the productivity slowdown. Some emphasize that technological progress and its diffusion throughout the economy seem to be slower over the past decade or so... And still others focus on a dramatic slowing in the creation of new businesses, which are often more innovative than established firms. While each of these factors has likely played a role in slowing productivity growth, the extent to which they will continue to do so is an open question."[11]

While Figure 2 shows that different states have experienced both positive and negative changes to rates of immigrant entrepreneurship between 2007 and 2012, the national rate of entrepreneurship has declined over time. Judging by my findings, visa policy has significant implications for rates of entrepreneurship. When deliberating about shaping future rates of productivity and output growth the U.S., it would be worthwhile to consider how opening up visa policy and other immigration categories could benefit long-run growth. Addressing Yellen's comments about the impact of "technological progress," others have shown that the H-1B and student visa categories have positive impacts on technological progress as well. Kerr and Lincoln (2010) show that raising the cap on H-1B admissions increases immigrant employment in science and engineering, as well as patenting. Hunt and Gaulthier-Loiselle (2008) also find a positive impact of immigration on immigrant patenting, as well as positive spillover effects for native patenting.

The U.S.'s current policies on immigration have been a source of confusion and dismay for many in recent months. Under President Trump, whose recent executive orders on immigration have substantially tightened policy, it seems that the prospects for increasing immigrant entrepreneurship in the U.S. are low. Not only could the tightening of immigration policy have detrimental effects on entrepreneurship in the U.S., but the atmosphere of hostility toward immigrants that President Trump's election has intensified could result in lower immigrant demand to enter the U.S. While it may not be possible to see the effects of more stringent immigration policy and hostility toward immigrants in the near future, the long-run prospects do not seem entirely positive, considering my results.

In order to consider the full impact of H-1B visa policy, one must weigh the potential benefits against the potential costs. President Trump has vacillated between stating that the H-

[11] The Goals of Monetary Policy and How We Pursue Them. (January 18, 2017). Retrieved April 17, 2017 from https://www.federalreserve.gov/newsevents/speech/yellen20170118a.htm

1B program should be eliminated entirely, calling it "unfair to workers,"[12] and conversely claiming that it should be kept. Other critics of the H-1B program,[13] who have conducted research into its functions, claim, rather, that it needs "a substantial overhaul," citing low wage requirements and deficient program oversight and enforcement, and that H-1B workers can be easily exploited because employers hold the visa rather than the workers. There is also evidence that a few outsourcing companies obtain a substantial portion of the available H-1B visas annually, crowding out smaller American companies who could benefit from foreign workers.[14] Such critiques of the program must not be disregarded.

While my results indicate that we must incorporate visa policy into our discussions of technological progress, productivity growth, and especially entrepreneurship, it is especially necessary to consider how the U.S. can reform its visa programs to better suit the welfare of immigrants.

7 Conclusion

Immigrants have a substantial role in determining rates of entrepreneurship across states. Recent concerns over the declining national rates of business formation in the U.S. make learning about immigrant entrepreneurs in the U.S. of great importance. My study has examined numerous individual- and state-level factors that are correlated with increased likelihood of being self-employed and compared these for immigrants and natives. I have also collected various state-level factors that are associated with increased rates of immigrant entrepreneurship across states. I also conducted an analysis to determine the effect of H-1B visa policy on shares of immigrant entrepreneurship across states. My findings indicate that exogenous increases in the national stock of H-1B workers lead to increased rates of immigrant entrepreneurship. In other

[12] Trump, Rubio hit Disney over H-1B visa usage. (March 11, 2016). Retrieved April 17, 2017 from http://www.cnn.com/videos/politics/2016/03/11/republican-debate-miami-trump-rubio-disney-h1b-visa-2.cnn/video/playlists/2016-republican-presidential-debates/

[13] The H-1B and L1 Visa Programs: Out of Control. (October 14, 2010). Retrieved from http://globalworkers.org/sites/default/files/visafiles/R%20Hira%20EPI%20L-1%20paper%202.pdf.

[14] How Outsourcing Companies Are Gaming the Visa System. (November 10, 2015). Retrieved April 17, 2017 from https://www.nytimes.com/interactive/2015/11/06/us/outsourcing-companies-dominate-h1b-visas.html

words, based on a state's dependency on H-1B workers, an increase to the national cap on admissions of H-1B workers will differentially increase shares immigrant-owned new businesses.

My study raises certain questions and considerations that I hope future research will endeavor to address. While my study documents many of the determinants of immigrant entrepreneurship in the U.S., I believe there remains much more to learn about the national population of immigrant entrepreneurs. There is room to discover how the U.S. can incentivize immigrant entrepreneurship across states. As I have noted, income for self-employed immigrants is greater than that of other immigrants. While this may be the result of sorting into the optimal profession, higher rates of entrepreneurship could benefit the immigrant population. In addition, it would be worthwhile to consider the effects of additional visa or permanent residency categories on immigrant entrepreneurship. National visa policy, particularly with regard to the H-1B, has considerable potential to determine future rates of immigrant entrepreneurship in the U.S. and should be duly considered.

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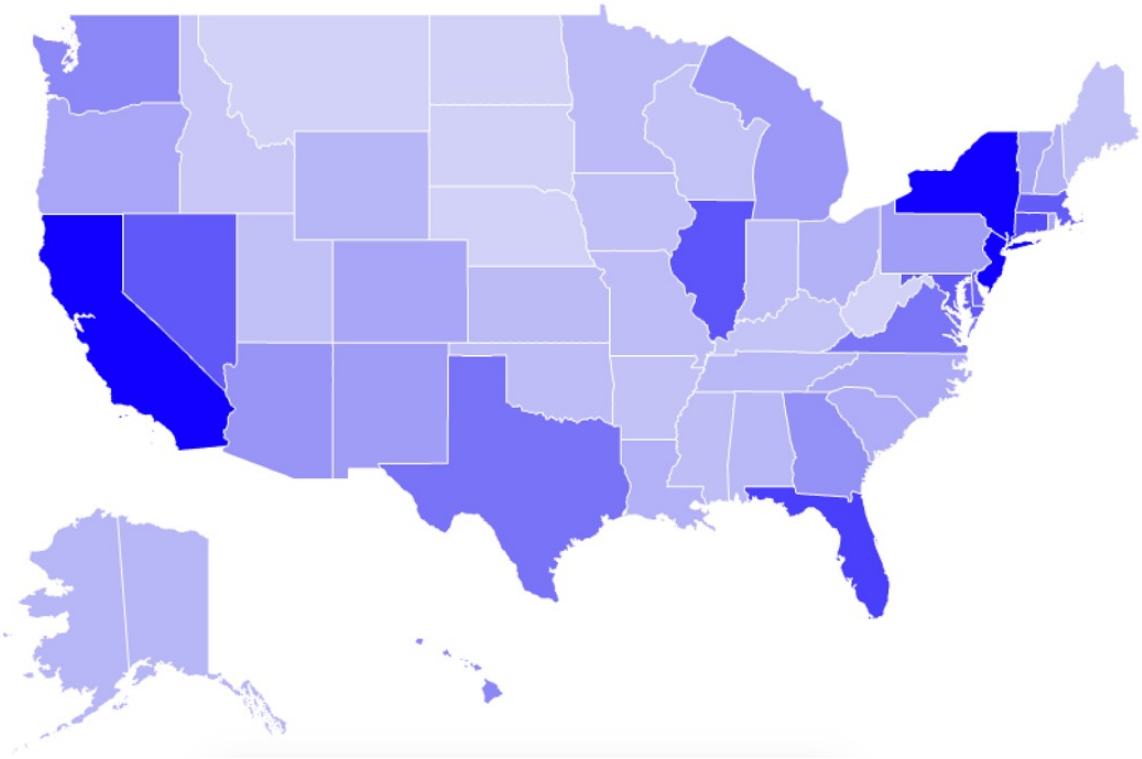
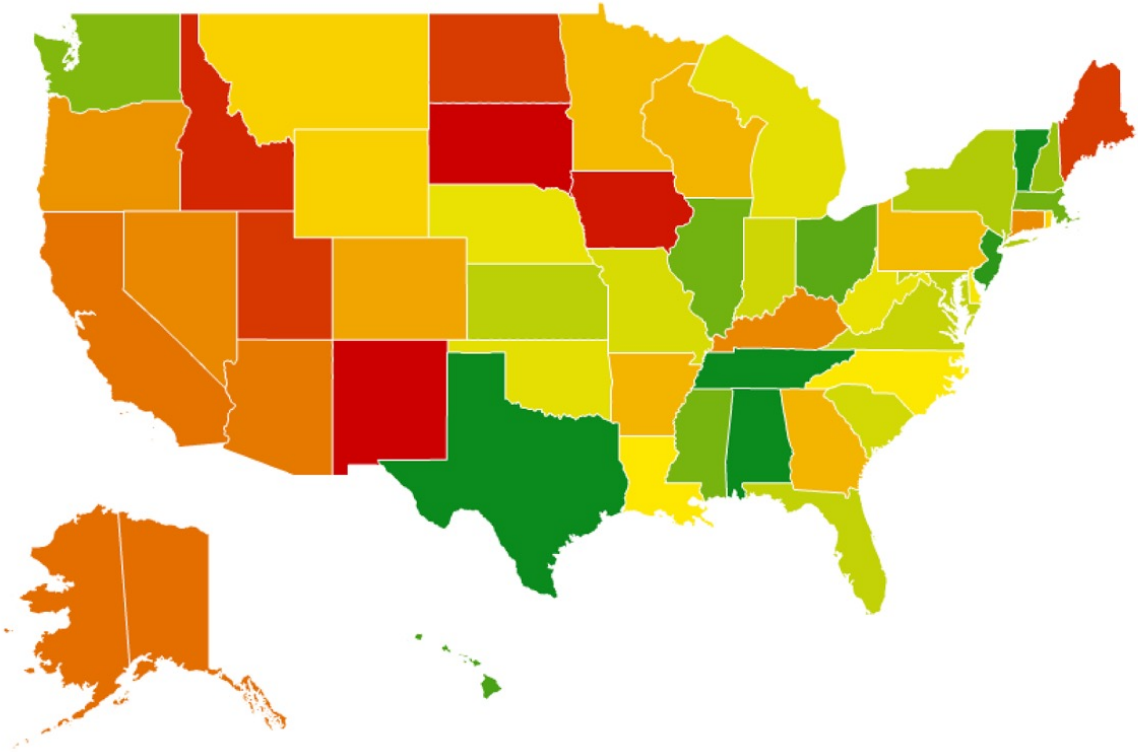
9 Appendix: Figures and Tables

Figure 1: Geographic Heat Map of the Immigrant Share of New Businesses (2007)



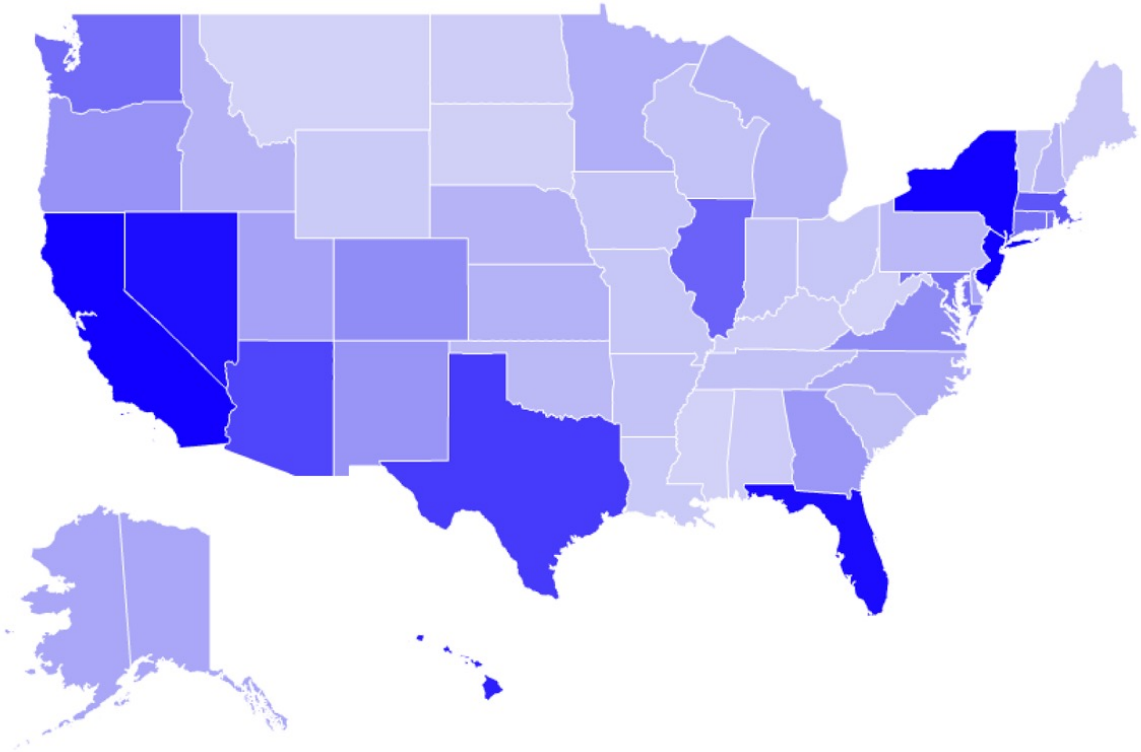
Note: Darker shades represent higher percentages of immigrant-owned new businesses. The immigrant shares of new businesses are calculated using the 2007 Survey of Business Owners and Self-Employed Persons (SBO). The sample includes incorporated, non-public, employer firms founded from 2003 to 2007 and for which data is available on the birthplace(s) of the owner(s). Details on the percentage of immigrant-owned new businesses in each state are found in Table 1.

Figure 2: Geographic Heat Map of the Change in the Immigrant Share of New Businesses from 2007 to 2012



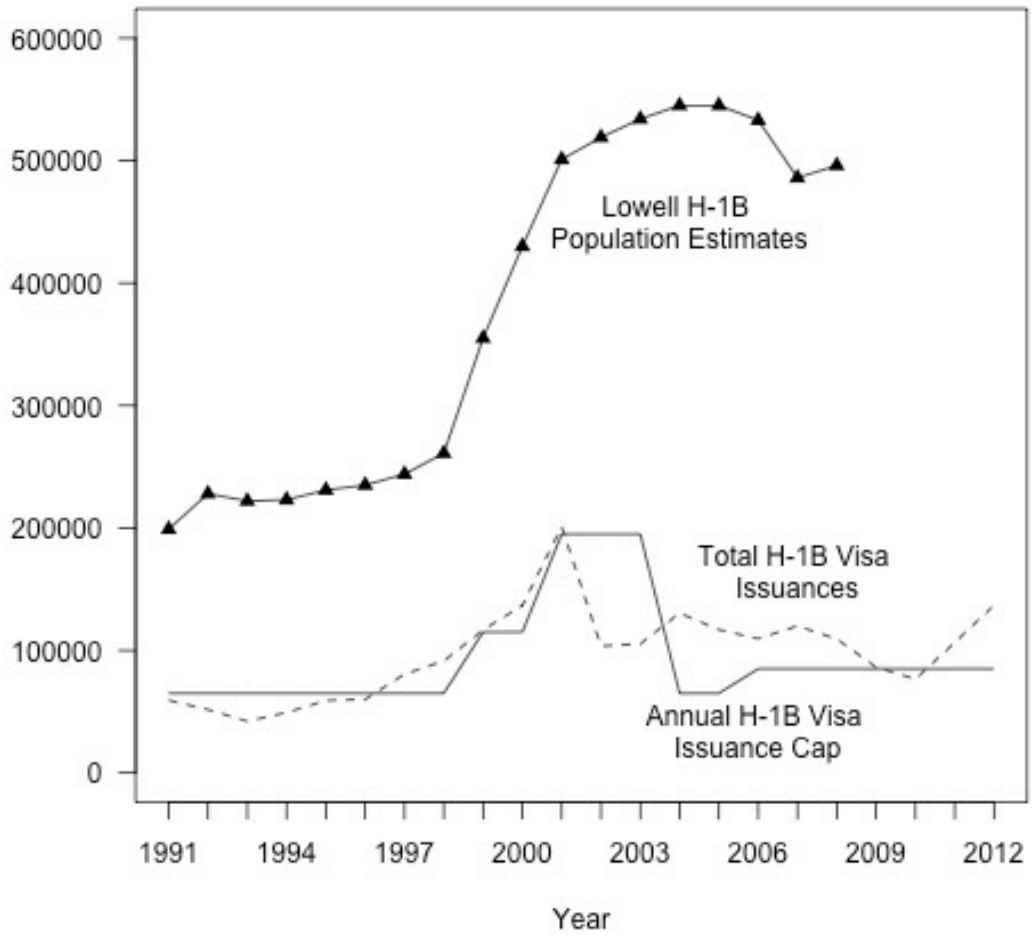
Note: Red-colored states experienced decreases in the percentage of immigrant-owned new businesses from 2007 to 2012. Green-colored states experienced increases in the percentage of immigrant-owned new businesses during the same time frame. The immigrant shares of new businesses are calculated using the 2007 and 2012 SBO. The samples include incorporated, non-public, employer firms founded within five years of the SBO and for which data is available on the birthplace(s) of the owner(s). Details on the changes in the shares of immigrant-owned new businesses across states are found in Table 2.

Figure 3: Geographic Heat Map of the Immigrant Percentage of the Population (2007)



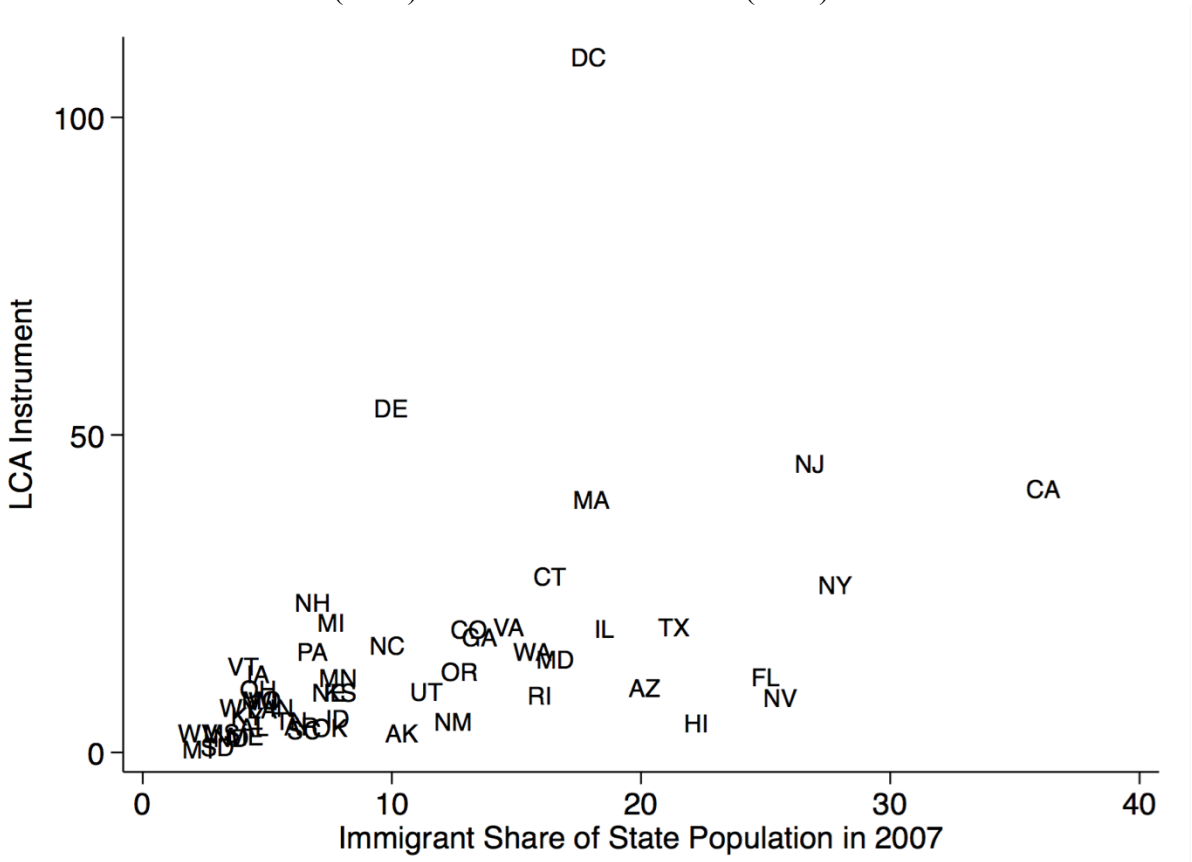
Note: Darker shades represent larger immigrant populations. The immigrant percentages of the state populations are calculated using the 2007 American Community Survey (ACS). The sample includes all people for whom data on birthplace is available. Details on the immigrant percentage of the population in each state are found in Table 3.

Figure 4: Annual H-1B Population Estimates (Lowell, 2001), Admissions Caps, and Admissions



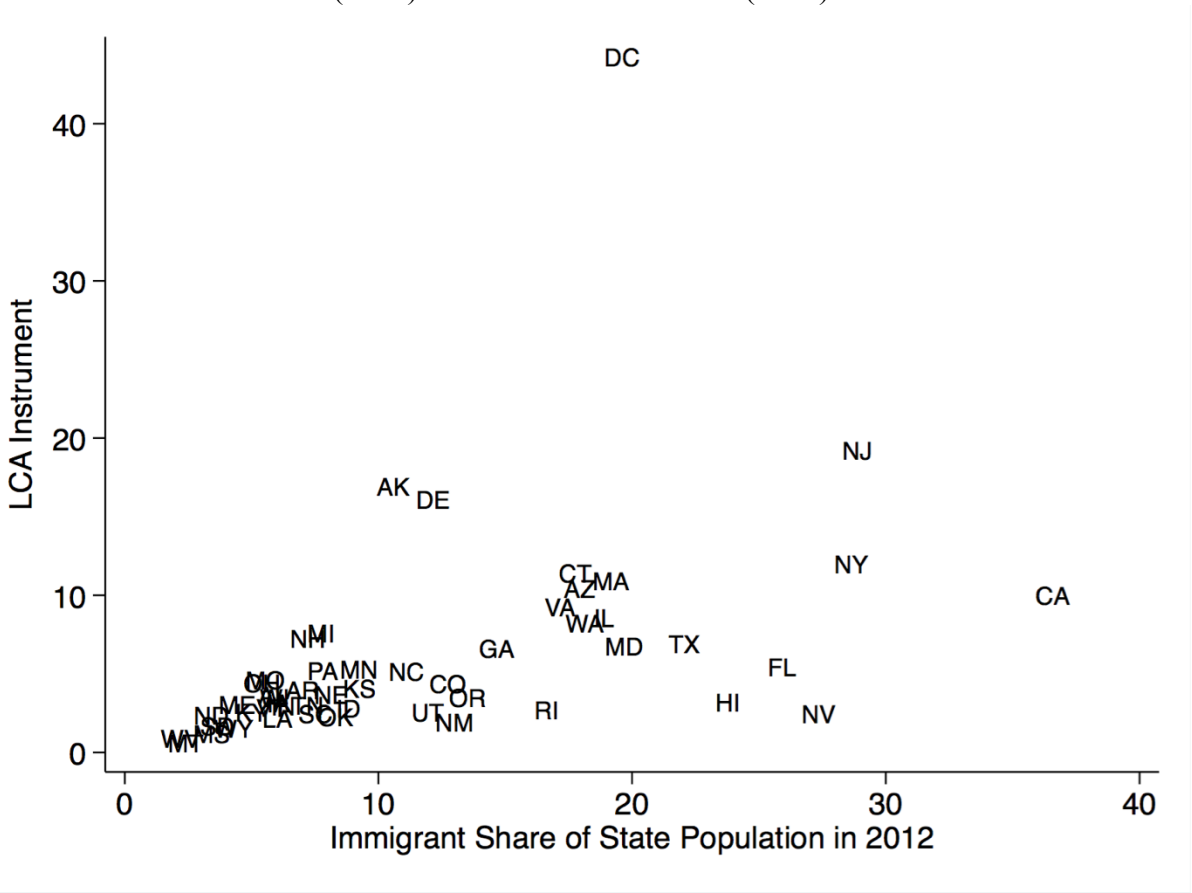
Note: This graph displays estimates of the annual population of H-1B beneficiaries in the U.S., provided by Lowell (2001) up to the year 2008, the annual cap on H-1B visas, and the annual number of issuances of H-1B visas to foreign workers.
Source: Reports and Studies. (February 22, 2017). Retrieved April 20, 2017 from https://www.uscis.gov/tools/reports-studies/reports-and-studies.

Figure 5: First-Stage Relationship between the Immigrant Percentage of the State Population (2007) and the LCA instrument (2007)



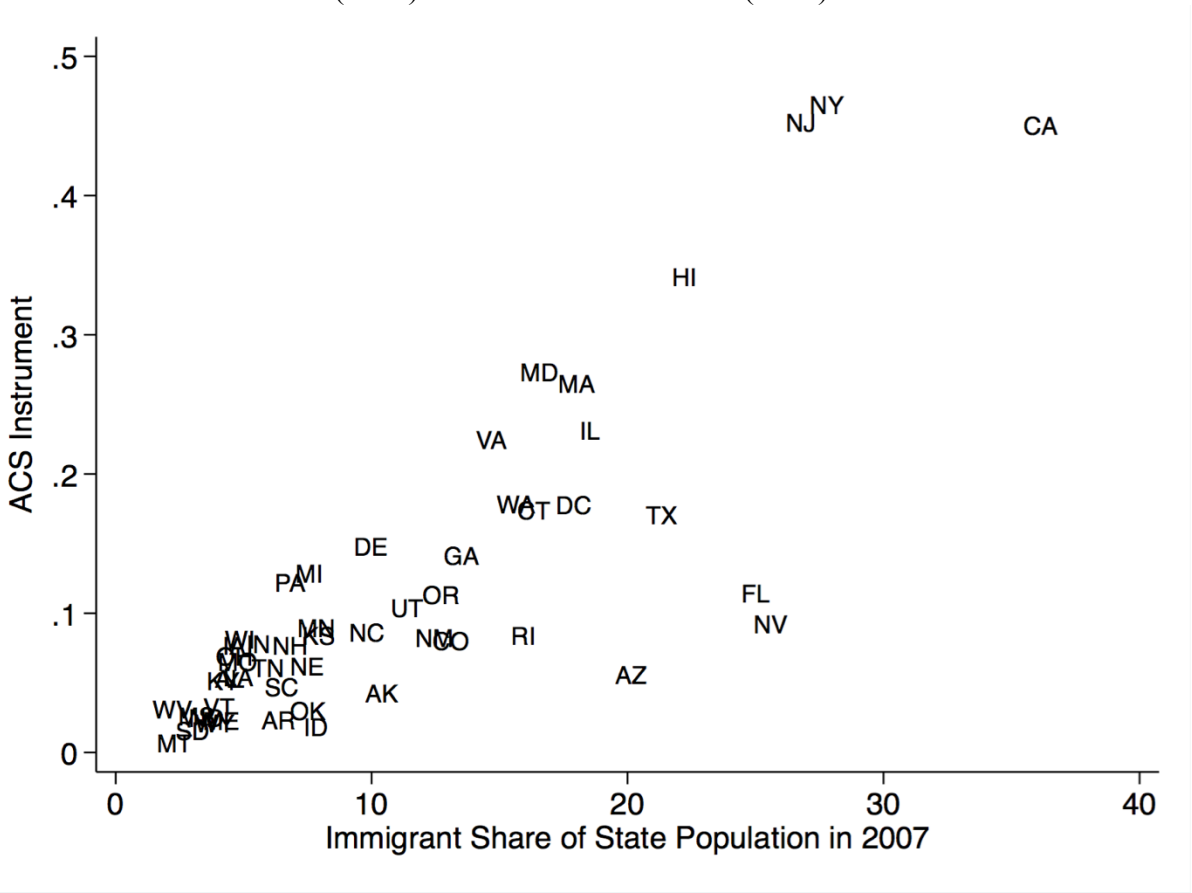
Note: This table plots the immigrant percentage of each state's population in 2007, calculated using the 2007 ACS, against the Labor Conditional Application (LCA) instrument for 2007. Each state is represented on the graph as its abbreviated name. Table 13 reports the correlation between these variables.

Figure 6: First-Stage Relationship between the Immigrant Percentage of the State Population (2012) and the LCA instrument (2012)



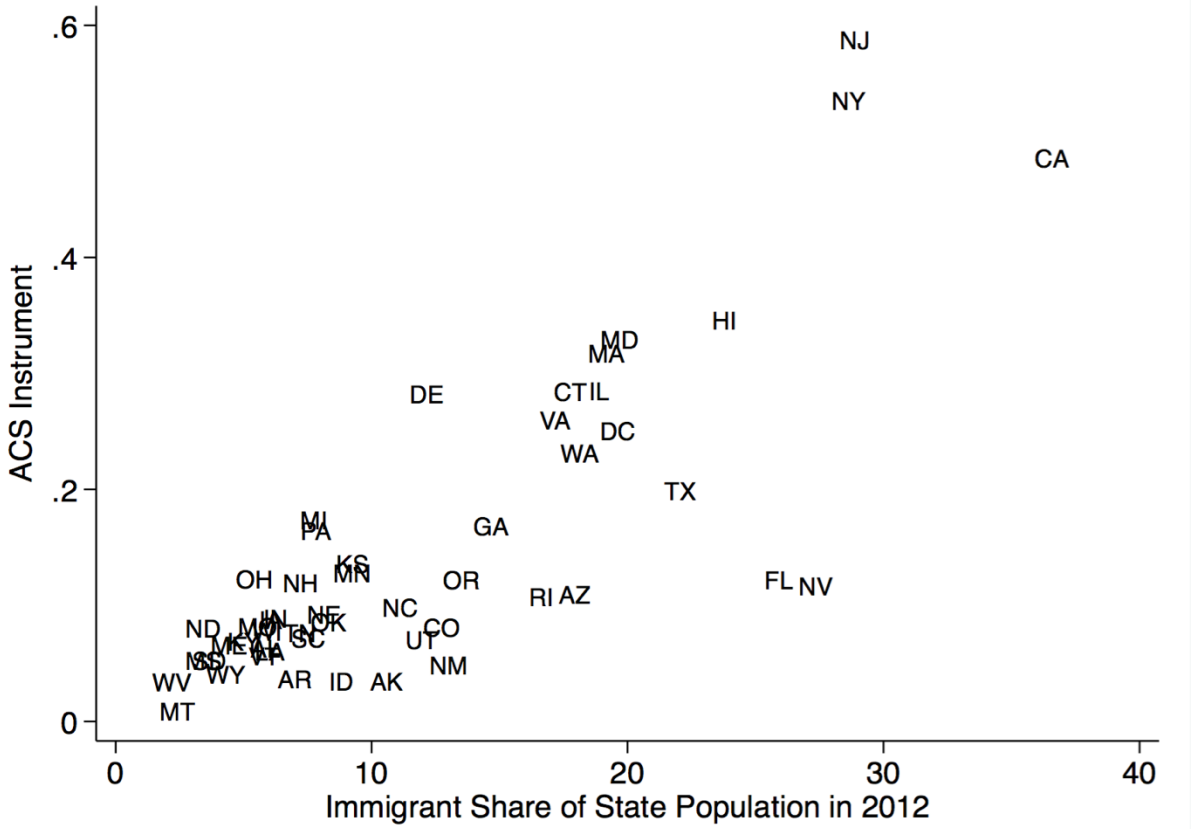
Note: This table plots the immigrant percentage of each state's population in 2012, calculated using the 2012 ACS, against the Labor Conditional Application (LCA) instrument for 2012. Each state is represented on the graph as its abbreviated name. Table 13 reports the correlation between these variables.

Figure 7: First-Stage Relationship between the Immigrant Percentage of the State Population (2007) and the ACS instrument (2007)



Note: This table plots the immigrant percentage of each state's population in 2007, calculated using the 2012 ACS, against the ACS instrument for 2007. Each state is represented on the graph as its abbreviated name. Table 13 reports the correlation between these variables.

Figure 7: First-Stage Relationship between the Immigrant Percentage of the State Population (2012) and the ACS instrument (2012)



Note: This table plots the immigrant percentage of each state's population in 2012, calculated using the 2012 ACS, against the ACS instrument for 2012. Each state is represented on the graph as its abbreviated name. Table 13 reports the correlation between these variables.

Table 1: States with the Highest and Lowest Shares of Immigrant-Owned New Businesses

	State	2007	State	2012
1	California	42.9%	New Jersey	44.4%
2	New York	40.5%	New York	43.2%
3	New Jersey	39.5%	California	42.0%
4	Florida	30.7%	Florida	32.9%
5	Delaware	29.1%	District of Columbia	32.2%
6	District of Columbia	29.1%	Illinois	31.6%
7	Connecticut	28.9%	Massachusetts	30.3%
8	Illinois	28.0%	Maryland	30.2%
9	Maryland	28.0%	Texas	30.0%
10	Massachusetts	26.8%	Tennessee	30.0%
…				
42	Maine	9.1%	Nebraska	8.0%
43	Kentucky	9.0%	Utah	7.6%
44	Arkansas	9.0%	Wyoming	6.8%
45	Iowa	8.6%	Maine	6.7%
46	Idaho	7.5%	West Virginia	6.3%
47	Nebraska	6.7%	Iowa	6.1%
48	North Dakota	6.1%	Montana	5.5%
49	South Dakota	6.1%	Idaho	4.7%
50	Montana	5.0%	North Dakota	4.7%
51	West Virginia	4.9%	South Dakota	2.4%

Note: This table reports states with the highest and lowest percentages of immigrant-owned new businesses in 2007 and 2012. The 2007 and 2012 SBO samples include incorporated, non-public, employer firms, founded from 2003 to 2007.

Table 2: States with the Largest and Smallest Changes in the Share of Immigrant-Owned New Businesses from 2007 to 2012

	State	Percent Change
1	Tennessee	16.6%
2	Texas	5.5%
3	Alabama	5.3%
4	New Jersey	4.9%
5	Hawaii	4.0%
6	Ohio	3.9%
7	Mississippi	3.6%
8	Alaska	3.6%
9	Illinois	3.6%
10	Massachusetts	3.5%
…		
42	Arizona	-1.2%
43	North Dakota	-1.4%
44	Utah	-2.1%
45	Maine	-2.4%
46	Iowa	-2.5%
47	Idaho	-2.8%
48	Wyoming	-3.2%
49	South Dakota	-3.7%
50	New Mexico	-4.8%
51	Delaware	-6.2%

Note: This table reports the states with the largest and smallest changes in the share of immigrant-owned new businesses between 2007 and 2012. The SBO sample used to calculate these changes includes incorporated, non-public, employers, founded from 2003 to 2007 in the 2007 SBO and 2008 to 2012 in the 2012 SBO.

Table 3: States with the Largest and Smallest Immigrant Populations

	State	2007	State	2012
1	California	28.0%	California	28.1%
2	New York	22.1%	New York	23.2%
3	New Jersey	20.4%	New Jersey	22.0%
4	Florida	19.7%	Florida	20.6%
5	Nevada	19.6%	Nevada	20.3%
6	Hawaii	18.4%	Hawaii	19.5%
7	Texas	16.7%	Texas	17.3%
8	Arizona	16.0%	Massachusetts	15.8%
9	Massachusetts	14.9%	District of Columbia	15.2%
10	Illinois	14.1%	Maryland	15.0%
…				
42	Missouri	4.0%	Maine	4.3%
43	Louisiana	3.6%	Louisiana	4.2%
44	Wyoming	3.5%	Alabama	4.2%
45	Alabama	3.3%	Kentucky	3.8%
46	Kentucky	3.2%	Wyoming	3.8%
47	North Dakota	3.1%	North Dakota	3.3%
48	South Dakota	2.8%	South Dakota	3.3%
49	Montana	2.6%	Montana	2.6%
50	Mississippi	2.2%	Mississippi	2.6%
51	West Virginia	1.6%	West Virginia	1.7%

Note: This table reports the states with the largest and smallest immigrant percentages of their total populations in the 2007 and 2012 iterations of the ACS.

Table 4: Comparison of Samples of Self-Employed Individuals in the 2007 and 2012 SBO and ACS

	Owners of Employer Firms SBO: 2007		Self-Employed Individuals and Owners of Employer Firms SBO: 2007		Self-Employed Individuals and Owners of Employer Firms ACS: 2007 and 2012	
Characteristic	Immigrants	Non-Immigrants	Immigrants	Non-Immigrants	Immigrants	Non-Immigrants
Education:						
- Less than High School Education	8.4%	2.2%	11.6%	3.7%	22.2%	6.0%
- High School and Some College	42.6%	46.9%	44.5%	49.6%	45.2%	56.2%
- Bachelor's Degree and Higher	49.1%	50.9%	43.9%	46.7%	32.7%	37.8%
Age:						
- ACS: 18 - 29 - SBO: 18 - 25	1.0%	1.5%	2.5%	4.7%	7.4%	7.2%
- ACS: 30 - 50 - SBO: 25 - 54	83.7%	77.8%	81.3%	72.4%	62.8%	53.3%
- ACS: 51 - 64 - SBO: 55 - 64	15.3%	20.6%	16.3%	22.9%	29.8%	39.5%
Female	31.9%	31.8%	38.9%	40.2%	32.5%	30.8%

Note: The SBO 2007 sample of owners of employer firms includes individuals whose firms are incorporated, non-public, employers, founded from 2003 to 2007, and for whom data is available on their birthplace, education, age, and gender. The SBO sample of self-employed individuals and owners of employer firms includes individuals who are self-employed and those whose firms are non-public, incorporated, employers, founded from 2003 to 2007 and for whom data is available on their birthplace, education, age, and gender. There are no requirements that the individual employ others. The ACS 2007 and 2012 samples of self-employed individuals and business owners include individuals for whom data is available on their birthplace, education, age, gender, and whether they are self-employed full-time.

Table 5: Percentages of Self-Employed Immigrants and Non-Immigrants

	ACS: 2007 and 2012	
Year	Immigrant	Non-Immigrant
2007	10.5%	10.1%
2012	9.7%	8.3%

Note: This table presents the percentages of the immigrant and non-immigrant populations who report being self-employed in an incorporated business. The ACS 2007 and 2012 samples of self-employed individuals include individuals for whom data is available on their birthplace whether they are self-employed full-time.

Table 6: Sources of Start-Up Capital By Immigrant Status of Owner(s)

	Owner Composition of Firm		
Source of Capital	Immigrant-Only	Non-Immigrant-Only	Mixed
Personal Savings	70.3%	69.8%	72.4%
Other Personal Assets	9.5%	12.7%	14.1%
Home Equity	12.9%	13.5%	18.0%
Credit Cards	14.6%	18.1%	19.5%
Government Loan	1.0%	1.5%	1.9%
Government Guaranteed Loan	1.1%	2.0%	2.2%
Bank Loan	13.8%	18.4%	18.6%
Loan from Family/Friends	4.9%	4.7%	6.1%
Venture Capitalist	0.5%	0.8%	2.3%
Grant	0.2%	0.2%	0.4%
Other	3.1%	3.1%	4.5%
None Needed	5.8%	7.3%	4.4%

Note: This table presents the percentage of firms in the 2007 SBO who report using each type of start-up capital by the composition of the firms' owners. It is possible for firms to report multiple sources of start-up capital. Thus, the columns do not sum to 100%. The sample of firms in the SBO include incorporated, non-public, employer firms, founded from 2003 to 2007 and for which data is available on the birthplaces of the owner(s).

Table 7: Individual-Level OLS Regressions of Individual- and State-Level Characteristics on Likelihood of Being Self-Employed

	Immigrants						Non-Immigrants					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Probability of Self-Employment						Probability of Self-Employment					
Female	-0.0412***	-0.0538***	-0.0412***	-0.0412***	-0.0413***	-0.0412***	-0.0595***	-0.0632***	-0.0595***	-0.0595***	-0.0595***	-0.0595***
	(0.000648)	(0.000851)	(0.000648)	(0.000648)	(0.000648)	(0.000648)	(0.000250)	(0.000294)	(0.000250)	(0.000250)	(0.000250)	(0.000250)
Education												
High School and Some College	0.0108***	-0.00448***	0.0108***	0.0108***	0.0108***	0.0108***	-0.0201***	-0.0427***	-0.0201***	-0.0201***	-0.0201***	-0.0201***
	(0.000855)	(0.00122)	(0.000855)	(0.000855)	(0.000855)	(0.000855)	(0.000582)	(0.000742)	(0.000582)	(0.000582)	(0.000582)	(0.000582)
Bachelor's Degree and Higher	-0.00131	-0.0349***	-0.00129	-0.00131	-0.00131	-0.00131	-0.0104***	-0.0555***	-0.0104***	-0.0104***	-0.0104***	-0.0104***
	(0.000929)	(0.00132)	(0.000929)	(0.000929)	(0.000929)	(0.000929)	(0.000602)	(0.000774)	(0.000602)	(0.000602)	(0.000602)	(0.000602)
Age												
30 - 50	0.0557***	0.0641***	0.0557***	0.0557***	0.0557***	0.0557***	0.0538***	0.0575***	0.0538***	0.0538***	0.0538***	0.0538***
	(0.000943)	(0.00151)	(0.000943)	(0.000943)	(0.000943)	(0.000943)	(0.000359)	(0.000472)	(0.000359)	(0.000359)	(0.000359)	(0.000359)
51 - 60	0.0843***	0.0947***	0.0843***	0.0843***	0.0843***	0.0843***	0.0891***	0.0935***	0.0891***	0.0891***	0.0891***	0.0891***
	(0.00117)	(0.00172)	(0.00117)	(0.00117)	(0.00117)	(0.00117)	(0.000392)	(0.000493)	(0.000392)	(0.000392)	(0.000392)	(0.000392)
Income Ratio	-0.00710	-0.0214***	-0.00520	-0.00794	-0.00892	-0.00752	0.00906**	-0.0216***	0.00686	0.00517	0.00756*	0.00399
	(0.00593)	(0.00787)	(0.00605)	(0.00594)	(0.00601)	(0.00597)	(0.00372)	(0.00438)	(0.00450)	(0.00376)	(0.00436)	(0.00386)
Home Owner	0.0315***		0.0315***	0.0315***	0.0315***	0.0315***	0.0254***		0.0254***	0.0254***	0.0253***	0.0254***
	(0.000714)		(0.000714)	(0.000714)	(0.000714)	(0.000714)	(0.000320)		(0.000320)	(0.000320)	(0.000320)	(0.000320)
Home Value		0.0492***						0.0469***				
		(0.000569)						(0.000196)				
Years in the U.S.	0.000509***	0.000153***	0.000509***	0.000510***	0.000509***	0.000509***						
	(2.95e-05)	(3.81e-05)	(2.95e-05)	(2.95e-05)	(2.95e-05)	(2.95e-05)						
Number of Loans < $100,000			0.00102***						0.000493***			
			(0.000273)						(8.28e-05)			
Number of Loans < $250,000			-0.0188						0.0108**			
			(0.0146)						(0.00470)			
Number of Loans < $1,000,000			-0.000390						-0.0138**			
			(0.0153)						(0.00585)			
Gross Number of Loans				0.00140***						0.00110***		
				(0.000447)						(0.000167)		
Loan Amount < $100,000					4.89e-05						8.40e-05***	
					(3.63e-05)						(1.36e-05)	
Loan Amount < $250,000					-0.000134						3.45e-05	
					(0.000113)						(3.66e-05)	
Loan Amount < $1,000,000					3.74e-05						-2.22e-05	
					(7.76e-05)						(2.59e-05)	
Gross Loan Amount						2.61e-05						6.64e-05***
						(4.25e-05)						(1.36e-05)
Constant	0.105***	-0.419***	0.0850***	0.0877***	0.102***	0.101***	0.125***	-0.340***	0.118***	0.118***	0.114***	0.122***
	(0.00855)	(0.0131)	(0.0124)	(0.0101)	(0.0134)	(0.0103)	(0.00566)	(0.00695)	(0.00605)	(0.00578)	(0.00599)	(0.00571)
Observations	954,720	606,249	954,720	954,720	954,720	954,720	5,560,766	4,363,642	5,560,766	5,560,766	5,560,766	5,560,766
R-squared	0.023	0.033	0.023	0.023	0.023	0.023	0.031	0.041	0.031	0.031	0.031	0.031
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
State FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Note: The dependent variable in these regressions is an indicator for whether an individual is self-employed. These regressions estimate the effect of various individual-level characteristics, such as gender, education, home ownership, home value, years in the U.S. (if the individual is an immigrant), and state-level characteristics, such as loan availability, on the dependent variable. The dependent variable and invidual-level characteristics come from the 2007 and 2012 iterations of the ACS. The loan data comes from Community Reinvestment Act data. State and year fixed effects are included in all regressions. Standard errors are in parenthesis. Significance at the .01, .05, and .1 levels are indicated by ***, **, and *, respectively.

Table 8: OLS Regression of State-Level Characteristics of the Immigrant Population on the Share of Immigrant-Owned New Businesses

	(1) Share of Immigrant-Owned New Businesses
Immigrant Percentage of State Population	1.113***
	(0.0672)
Home Ownership Rate	-0.00157*
	(0.000858)
Education	
High School and Some College	-0.00145
	(0.00107)
Bachelor's Degree and Higher	0.00289***
	(0.000634)
Age	
30 - 50	0.00220
	(0.00224)
51 - 64	0.00319*
	(0.00191)
MHHI	-0.000127
	(0.000114)
Constant	-0.0105
	(0.156)
Observations	102
R-squared	0.858
Year FE	YES

Note: The dependent variable in this regression is the share of immigrant-owned new businesses in each state, calculated using the 2007 and 2012 SBO. These regressions estimate state-level characteristics of the immigrant population and industries in a state on the dependent variable. The independent variables that describe each state's immigrant population, such as the immigrant percentage of the state population, home ownership rate, education levels, and age levels, are calculated using the 2007 and 2012 ACS. MHHI is calculated using County Business Patterns (CPS) data. Year fixed effects are included in the regression. Standard errors are in parentheses. Significance at the .01, .05, and .1 levels are indicated by ***, **, and *, respectively.

Table 9: H-1B Petitions Approved by Country of Birth of Beneficiary in 2001 and 2006 (Top 10 Countries)

	2001			2006	
Country	Total Number	Total Percent	Country	Total Number	Total Percent
Total (all countries)	**331,206**	**100%**	**Total (all countries)**	**270,981**	**100%**
1 India	161,561	48.9%	India	135,329	49.9%
2 China, People's Republic	27,330	8.3%	China, People's Republic	23,638	8.7%
3 Canada	12,726	3.9%	Canada	10,996	4.1%
4 Philippines	10,389	3.1%	Philippines	8,870	3.3%
5 United Kingdom	9,682	2.9%	Korea	7,470	2.8%
6 Korea	6,468	2.0%	United Kingdom	5,995	2.2%
7 Pakistan	6,313	1.9%	Japan	5,181	1.9%
8 Japan	5,902	1.8%	Taiwan	3,919	1.4%
9 Taiwan	5,808	1.8%	Pakistan	3,781	1.4%
10 Colombia	3,703	1.1%	Mexico	3,435	1.3%

Note: This table reports the total number of approved H-1B petitions in 2001 and 2006 by the country of birth of the beneficiary. Only the ten countries with the greatest number of approved beneficiaries are reported. Thus, the total approved petitions of each country will not sum to the total of "all countries." Beneficiaries include foreign workers recieving visas for initial and continued employment.

Source: Reports and Studies. (February 22, 2017). Retrieved April 20, 2017 from https://www.uscis.gov/tools/reports-studies/reports-and-studies.

Table 10: H-1B Petitions Approved by Occupation of Beneficiary in 2001 and 2006 (Top 10 Occupations)

	2001			2006	
Occupation	Total Number	Total Percent	Occupation	Total Number	Total Percent
Total (all occupations)	**331,206**	**100%**	**Total (all occupations)**	**270,981**	**100%**
1 Computer-related occupations	191,397	58.0%	Computer-related occupations	130,556	48.4%
2 Occupations in Architecture, Engineering, and Surveying	40,388	12.2%	Occupations in Architecture, Engineering, and Surveying	29,883	11.1%
3 Occupations in Administrative Specializations	23,794	7.2%	Occupations in Education	25,610	9.5%
4 Occupations in Education	17,431	5.3%	Occupations in Administrative Specializations	24,636	9.1%
5 Managers and officials	12,423	3.8%	Occupations in Medicine and Health	15,703	5.8%
6 Occupations in Medicine and Health	11,334	3.4%	Managers and officials	10,061	3.7%
7 Occupations in Life Sciences	6,492	2.0%	Occupations in Life Sciences	7,731	2.9%
8 Occupations in Social Sciences	6,145	1.9%	Miscellaneous Professional, Technical, and Managerial	5,962	2.2%
9 Occupations in Mathematics and Physical Sciences	5,772	1.7%	Occupations in Mathematics and Physical Sciences	5,949	2.2%
10 Miscellaneous Professional, Technical, and Managerial	5,662	1.7%	Occupations in Social Sciences	5,862	2.2%

Note: This table reports the total number of approved H-1B petitions in 2001 and 2006 by the occupation of the beneficiary. Only the ten occupations with the greatest number of approved beneficiaries are reported. Thus, the total number of approved petitions for each occupation will not sum to the total of "all occupations." Beneficiaries include foreign workers recieving visas for initial and continued employment.

Table 11: Most and Least Dependent States Based on LCA Measure of Dependency

	LCA-Based Dependency 2001 and 2006 Filings for H-1B Visas Normalized by State Population			
	State	2001	State	2006
1	District of Columbia	8.35	District of Columbia	3.36
2	Delaware	4.14	New Jersey	1.46
3	New Jersey	3.48	Alaska	1.29
4	California	3.17	Delaware	1.22
5	Massachusetts	3.04	New York	0.91
6	Connecticut	2.12	Connecticut	0.87
7	New York	2.02	Massachusetts	0.83
8	New Hampshire	1.81	Arizona	0.79
9	Michigan	1.57	California	0.76
10	Texas	1.52	Virginia	0.70
…				
42	Alabama	0.31	Nevada	0.19
43	Oklahoma	0.30	North Dakota	0.18
44	South Carolina	0.27	Oklahoma	0.17
45	West Virginia	0.24	Louisiana	0.17
46	Alaska	0.24	New Mexico	0.15
47	Mississippi	0.24	South Dakota	0.13
48	Maine	0.20	Wyoming	0.12
49	North Dakota	0.18	Mississippi	0.09
50	South Dakota	0.08	West Virginia	0.07
51	Montana	0.05	Montana	0.05

Note: This table reports the states with the largest and smallest dependencies on the H-1B program. The 2001 and 2006 LCA-based measures of dependency are calculated as the sum of foreign workers requested in LCAs in a state normalized by the state population. These dependencies are used to calculate the LCA instruments.

Table 12: Most and Least Dependent States Based on ACS Measure of Dependency

ACS-Based Dependency

2001 and 2006 Percentages of Immigrants from China, Hong Kong, Macau, Taiwan, Singapore, India, Pakistan, and Bangladesh

	State	2001	State	2006
1	New York	0.0355	New Jersey	0.0446
2	New Jersey	0.0345	New York	0.0406
3	California	0.0344	California	0.0369
4	Hawaii	0.0261	Hawaii	0.0263
5	Maryland	0.0208	Maryland	0.0250
6	Massachusetts	0.0202	Massachusetts	0.0241
7	Illinois	0.0177	Illinois	0.0216
8	Virginia	0.0172	Connecticut	0.0216
9	Washington	0.0136	Delaware	0.0215
10	District of Columbia	0.0136	Virginia	0.0197
…				
42	West Virginia	0.0024	Vermont	0.0043
43	Oklahoma	0.0023	South Dakota	0.0041
44	Mississippi	0.0020	Mississippi	0.0040
45	North Dakota	0.0020	New Mexico	0.0037
46	Arkansas	0.0018	Wyoming	0.0031
47	Maine	0.0018	Arkansas	0.0028
48	Wyoming	0.0016	Alaska	0.0027
49	Idaho	0.0014	Idaho	0.0027
50	South Dakota	0.0012	West Virginia	0.0026
51	Montana	0.0006	Montana	0.0007

Note: This table reports the states with the largest and smallest dependencies on the H-1B program. The 2001 and 2006 ACS-based measures of dependency are calculated as the sum of the percentages of immigrants from China, Hong Kong, Macau, Taiwan, Singapore, India, Pakistan, and Bangladesh in each state. These dependencies are used to calculate the ACS instruments.

Table 13: First-Stage Regressions of LCA and ACS Instruments on the Immigrant Percentage of the State Population

	(1)	(2)
	Immigrant Percentage of Population	
LCA IV	0.00223***	
	(0.000637)	
ACS IV		0.537***
		(0.0381)
Home Ownership Rate	-0.00438***	0.000347
	(0.00119)	(0.000798)
Education		
High School and Some College	-0.000571	0.00120
	(0.00163)	(0.000960)
Bachelor's Degree and Higher	-0.00381***	-0.00415***
	(0.000851)	(0.000512)
Age		
30 - 50	0.0150***	0.00338*
	(0.00285)	(0.00194)
30 - 50	0.0127***	0.00226
	(0.00247)	(0.00168)
MHHI	-4.58e-05	0.000474***
	(0.000176)	(0.000101)
Constant	-0.630***	-0.407***
	(0.217)	(0.131)
Observations	102	102
R-squared	0.521	0.827
Year FE	YES	YES

Note: This table presents the first-stage regressions of the instrumental variable models. The dependent variable in these regressions is the immigrant share of the population of each state, calculated using the 2007 and 2012 ACS. These regressions separately estimate the effects of the instrumental variables, LCA IV and ACS IV, on the immigrant share of the state population in the presence of other state-level characteristics. The LCA and ACS instruments are calculated using the LCA and ACS measures of dependency, respectively. The independent variables that describe each state's immigrant population, such as the home ownership rate, education levels, and age levels, are calculated using the 2007 and 2012 ACS. MHHI is calculated using County Business Patterns (CPS) data. Year fixed effects are included in the regressions. Standard errors are in parentheses. Significance at the .01, .05, and .1 levels are indicated by ***, **, and *, respectively.

Table 14: OLS (1) and Second-Stage Regressions (2) and (3) of Instrumented Immigrant Percentage of the State Population on the State-Level Share of Immigrant-Owned New Businesses

	Share of Immigrant-Owned New Businesses		
	(1) OLS	(2) LCA IV	(3) ACS IV
Immigrant Percentage of State Pop.	1.113***	1.348***	1.257***
	(0.0672)	(0.200)	(0.0797)
Home Ownership Rate	-0.00157*	-0.000190	-0.000722
	(0.000858)	(0.00141)	(0.000881)
Education			
High School and Some College	-0.00145	-0.000848	-0.00108
	(0.00107)	(0.00119)	(0.00105)
Bachelor's Degree and Higher	0.00289***	0.00373***	0.00341***
	(0.000634)	(0.000938)	(0.000642)
Age			
30 - 50	0.00220	-0.00190	-0.000318
	(0.00224)	(0.00400)	(0.00233)
51 - 64	0.00319*	-0.000536	0.000903
	(0.00191)	(0.00356)	(0.00200)
MHHI	-0.000127	-0.000167	-0.000152
	(0.000114)	(0.000120)	(0.000112)
Constant	-0.0105	0.168	0.0988
	(0.156)	(0.214)	(0.157)
Observations	102	102	102
R-squared	0.858	0.840	0.851
Year FE	YES	YES	YES

Note: This table presents the second-stage regressions of the instrumental variables model, in columns (2) and (3), and the original state-level OLS model, in column (1), for comparison. The dependent variable in these regressions in the share of immigrant-owned new businesses in a state, calculated using the 2007 and 2012 SBO. These regressions estimate the effects of the immigrant percentage of the state population, instrumented using either the LCA or ACS instruments, on the dependent variable in the presence of other state-level variables. The results of the first-stage can be seen in Table 13. The independent variables that describe each state's immigrant population, such as the home ownership rate, education levels, and age levels, are calculated using the 2007 and 2012 ACS. MHHI is calculated using County Business Patterns (CPS) data. Year fixed effects are included in the regressions. Standard errors are in parentheses. Significance at the .01, .05, and .1 levels are indicated by ***, **, and *, respectively.